Non-Local Visual Masking and Holographic Projection System Compatible with Any Solid Surface

2 October 2023
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Introduction

Although many approaches have been devised for visually hiding physical objects by adding physical layers of material to the integument of objects to be hidden e.g. layers capable of either bending visible light around the object or projecting an image through a flexible LCD display, for instance, the content of which would be determined by cameras and even novel approaches such as coating objects with modified quartz crystals capable of partially solitonizing light so that it may pass directly through solid objects in support of cloaking, there is another approach related to this last approach which has not been adequately investigated: The projection of partially solitonized light from external sources with a high amplitude of soliton content and a low amplitude of partially solitonized light content in order to supplant observable reflected ambient light with the visual pattern of the operator's choosing.

Abstract

There are two primary goals that must be achieved in order to facilitate non-local visual masking of objects in a given area. The first is to either negate or deflect the ordinary ambient light that would otherwise reflect off of these objects and toward potential observers. The second is to replace that visual content with the content of the operator's choosing, given that if a large section of a treeline, for instance, were to turn into a black silhouette in broad daylight, this would arouse suspicion. Non-local projection systems capable of achieving both of these goals would not only enable the masking of objects one wishes to hide, but would perhaps find its greatest usefulness in the holographic projection of false images one wishes to use in order to create a tactical advantage.

The magnitude of soliton wave required in order to redirect visible is somewhat stronger than that required for other applications. Importantly, the visual light one wishes to introduce to a field should be of a brightness that is consistent with the natural surroundings, meaning that one must be careful not to project visible light into the target area that is of too high or too low of an amplitude relative to ambient conditions.

The question of paramount importance in developing a system capable of performing such a function is one of how to structure projected visible light with relation to solitonized light so that unitary pulses of energy may achieve both of these tasks in what is essentially a one-step process. In other words, the best approach would be to use the very energy pulse that pushes ambient light "out of

the way" in order to deliver the light associated with the false image one wishes to project.

If light exists as a soliton wave, it will not bounce off of an object but will instead tend to pass through it. While in this state, it has the tendency to "sweep up" ambient electromagnetism, both distorting and redirecting it to an extent determined by the magnitude of the wave. Somewhere between the realm of soliton waves and ordinary visible light is what one might term partially solitonized light. Partially solitonized light would retain some properties of ordinary light and some properties of soliton waves simultaneously and for a fixed duration of flight, as described in a previous publication.

If one were to project pure soliton energy in close collocation with ordinary light, that ordinary light would wind up being swept up by the very soliton waves one would propose to use in order to redirect or nullify ambient visible light. In order to overcome this problem, one might choose to emit packets of energy consisting of high-intensity, partially solitonized light which retain certain properties of what may be termed "frequency" so as to enable the beam to project light of specific colors into the operative area.

These packets of energy, rather than being flat walls of electro-magnetism, would take on shape akin to a diamond shape with the facets of the diamond compressed inward, much like illustrations of twinkling stars or the impression left on a cathode ray tube television at the moment it is turned off. Energy shaped in this manner would consist, at the central, tallest point of that diamond, a section that consists of what might be termed a true soliton wave. As one looks to the front and rear of this tallest portion, the proportion of the energy in that section of the packet would tend to consist of light that is "less solitonized" than that at the central point.

It is important to project light that is, at minimum, partially solitonized for the reason that when light is reflected from an object, it tends to take on the property of color that object would ordinarily bestow upon that light through a process of selective absorption of specific frequencies of light, leaving only the light not absorbed to be re-emitted as the light we see. If we project ordinary purple light, for example, toward an object that is not purple, the object would not appear to be the color of the light projected, but rather, some combination of that color of light and the color of the object. When dealing with ordinarily light, physical objects always have "some say" in the matter of its own appearance regardless of the frequency or amplitude of light projected toward it. When it comes to an object's influence on the apparent color of light that reflects from it, it has the greatest degree of "input" when it is bombarded with white light, less input when it is bombarded with single-mode light and the most marginal possible input when it is bombarded with what I have termed partially solitonized light.

Solitonized light, on the other hand, has a tendency to pass through objects entirely, although it is possible for a portion of this energy to be reflected by

dense objects. Crucially, if light is partially solitonized and a portion of it is allowed to reflect off of an object, the object would take on the appearance of the pattern of light projected toward it as partially solitonized light is substantially more resistant to the light-absorptive effects of objects upon color. By the time this specialized light traveled very far from the operative zone, it would naturally return to being "ordinary light" which would interact with its environment in a normative fashion.

As a great deal of visual reconnaissance is based upon infrared imaging, this type of visual masking may be employed in such a way as to deceive even infrared detection systems given that infrared light may be partially solitonized just as easily as visible light. This can be used to bestow holographic "Terra Cotta" soldiers with what appears to be normal body heat, to simulate real-time movement of troops walking and/or running on the ground or even to simulate the heat from the exhaust of a battle tank, just to name a few examples.

These illusions could be created by emitting these partially solitonized light packets from a series of drones surrounding the operative area with the intent being to deceive enemy forces at ground level or visual reconnaissance platforms in the form of drones or satellites.

As the soliton waves would be sufficiently powerful to essentially redirect (and solitonize) ambient reflected light, the ambient light reflected from the objects to be occluded would be essentially swept up and pushed several inches into the ground, at which point, given that this light would be only weakly solitonized, it would become essentially trapped beneath the surface of the Earth and would never be viewed by outside observers. This stands in contrast with the projected holographic false image, which, given that it would be projected at a substantially greater intensity, would be free to pass through the distortion field created by the projection system and would be alone in its ability to do so amongst all of the light in the environment. In this way, a true image may be successfully substituted with the illusion of one's choice by way of external influences and not merely by way of centrally-generated light sources; an approach which has the disadvantage of being effective only for hiding objects one has equipped with a visual cloaking technology ahead of time and effective only so long as the physical cloak remains free of surface contaminants.

Conclusion

Non-local visual masking via partially solitonized light projection has as an advantage that it is agnostic to whether masked objects become covered with mud, for instance; a common battlefield condition. Whereas a physical cloak would cease to function the instant it ceases to be clean (a condition unlikely to be maintained in real-world conditions) a cloak based upon sweeping away ambient light and replacing that light with an entirely different set of photonic energy would have many practical advantages over historically explored approaches.